

5        **METHOD OF IMMOBILIZING BIOLOGICALLY ACTIVE MOLECULES**  
         **FOR ASSAY PURPOSES IN A MICROFLUIDIC FORMAT**

10        **ABSTRACT OF THE DISCLOSURE**

         The invention provides biological molecules entrapped within a sol-gel matrix  
and incorporated into a microanalytical device for high throughput screening of samples.  
The pore sizes of the matrix may be chosen to match the size of the entrapped biological  
molecule or to correspond in size with the sample molecules to be analyzed. The sol-gel  
15        may be formed into structures that can be incorporated into or onto the microanalytical  
devices as microcolumns, microchannels, and microarrays. The sol-gel may incorporate  
substituted silanes and thereby provide a hydrophobic or hydrophilic surface, thereby  
providing the potential for use in microchromatography, microelectrophoresis or  
combinations thereof on the microanalytical device. A preferred detection method of  
20        samples is mass spectrometry.